which he had formerly communicated, and which was read to the Society on the 9th and 16th of February last; and having made in it several alterations and additions, consisting chiefly in notices of the discoveries of preceding anatomists in the same field of inquiry, again presents it to the Society with these improvements.

"Sequel to an Essay on the Constitution of the Atmosphere published in the Philosophical Transactions for 1826; with some account of the Sulphurets of Lime;" by John Dalton, D.C.L., F.R.S.

The author communicates in this paper an account of the investigations on the constitution of the atmosphere, which have engaged his attention during a long period of years. He enters into an examination of the comparative advantages of the three methods which are most in use for analysing common air, namely, firing it with hydrogen in Volta's eudiometer, or abstracting the oxygen by means of nitrous gas and quadrisulphuret of lime; and details the precautions to be taken in the employment of each of these methods, and the degree of accuracy to be expected from the results under different circumstances. He then relates numerous experiments made on air obtained from great heights, from which he is led to the conclusion that the proportion of oxygen to azote in the atmosphere on the surface of the earth is not precisely the same at all places and times; and that in elevated regions this proportion is somewhat less than at the surface of the earth, but not nearly so much as the theory of mixed gases would require, and that the reason for this is to be found in the incessant agitation of the atmosphere produced by winds and other causes.

"Researches on the Tides. Eighth Series. On the progress of the Diurnal Inequality-wave along the coasts of Europe." By the Rev. William Whewell, F.R.S., &c.

In the seventh series of these researches, the author pointed out the laws which the diurnal inequality of the height of high water follows, and showed that those laws are modified so as to exhibit very remarkable differences at different places, and to occasion some difficulty in conceiving the mechanical propagation of the tide-wave. He then suggested what appeared to be a possible solution of the difficulty; but as this suggestion was founded on facts from a few places only, he resolved to attempt to trace the progress of the wave which brings the diurnal inequality on some of the coasts, on which simultaneous observations were made at his request in June 1835; and the present memoir contains an account of the conclusions to which he has been led by this investigation. The details which he gives of the observations made, with this view, at nineteen different stations, appear to establish the conclusion, that the differences of diurnal inequalities at different places are governed by local circumstances, and do not form a progressive series.

"Note on the Fluctuations of the Height of High-water due to changes in the Atmospheric Pressure." By J. W. Lubbock, Esq., F.R.S.